UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,096	04/25/2001	Yoshihiro Sasaki	01USFP616-R.M.	4973

466	7590	12/09/2004	

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EXAMINER
STREGE, JOHN B

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 12/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/841,096	SASAKI ET AL.
	Examiner	Art Unit
	John B Strege	2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2004*.

2a)☐ This action is **FINAL**.　　2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-7 and 11-15* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *11-13 and 15* is/are allowed.

6)☒ Claim(s) *6 and 14* is/are rejected.

7)☒ Claim(s) *3-7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☒ All　b)☐ Some *　c)☐ None of:

　　1.☐ Certified copies of the priority documents have been received.

　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Response to Amendment

In response to applicant's amendment received on 07/29/04 all requested changes to specification and claims have been entered. Claims 1-2,8-10, and 16 have been canceled. Currently claims 3-7,and 11-15 are pending.

Applicant's arguments with respect to claims 6 and 14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

1.   Claims 3-7 are objected to because of the following informalities: Claim 3 was indicated as including allowable subject matter, and Applicants acknowledge amending the claim by adding the subject matter of claims 1-2. However lines 11-12 of the amended claim do not contain the original limitation because the words "said n" are omitted. Lines 11-12 should read as follows in accordance with the original claim

"a plurality of CPUs which executes said k sets of <u>said n</u> threads generated by said thread generator in parallel respectively,"

Claim 6 contains the same issue.

Appropriate correction is required. Claims 3-5, and 7 would be allowable if the correction is made.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Shimizu in view of Law and further in view of Young USPN

6,728,419.

Regarding claim 6, Shimuzu discloses a machine vision system (col. 3 line

57) with an image sampling or capturing device 12 (figures 1 and 2) for

inspecting the appearance of data collection symbols or other machine-readable

images (col. 3 lines 57-67). A central processing unit receives the video data

signals output from the area image and stored into a memory 16 coupled to the

CPU (col. 4 lines 47-54). Further discloses are multiple processors (14' figure 2)

where each of the CPUs 14' can be dedicated to a particular reading method, or

various modules or tasks can be divided among the CPUs based on their

availability (col. 5 lines 1-3). The memory 16 includes for processing efficiency an

array of memory locations addressed by the CPU 14 that correspond to and

represent the pixels in the field of view of the CCD array (col. 5-6 lines 66-67 and

1-2). The CPU 14 (read as the thread generator) performs multiple threads

through selected combinations of modules where each thread performs an

overall reading method that is directed to a particular problem (col. 11 lines 31-

42). As can be seen in figure 2, the multiple CPU's are connected to the memory.

Furthermore Shimizu discloses that the routine 100 shown in figure 3, and all the

routines and methods described, are permanently stored within the non-volatile

memory portion of the memory 16 (col. 5 lines 15-19). It should be noted that

Shimizu recites that the routine 300 assigns a particular thread or path through each set of modules dynamically (thus generating threads), or based on a prior knowledge that can be derived (col. 11 lines 13-14). Shimizu further discloses processing using multiple CPU's (as seen in figure 2).

Shimizu does not disclose expressly dividing the inspection region into n subregions or generating sets of threads for each subregion.

Law discloses that the size of data is becoming so large that conventional visualization tools are incapable of processing it (as stated in the abstract, page 225). To remedy this problem Law proposes breaking data into pieces, and then processing each piece separately, or distributing each piece across a network for parallel processing (first paragraph, section 2, page 226). Law further discloses that the pieces can be broken into further sub-pieces for the purpose of multi-threading, each processor taking one sub-piece (first paragraph, section 3, pages 227-228). Here the pieces can be read as sets, and each piece is made up of subpieces where each subpiece has a thread to a processor, thus generating k sets of n threads, and dividing the image into n subpieces. Law further discloses that while the architecture described in the paper supports a local multi-processor, shared memory approach, it is readily extensible to the distributed environment. In the distribute environment, data can be broken into pieces and assigned to systems across the network, thus providing for the limitation of the plurality of CPU's (third paragraph, section 5, page 232).

Shimizu & Law are combinable because they are from the same field of endeavor of parallel processing and multi-threading.

At the time of the invention, it would have been obvious to a person of ordinary s   kill in the art to combine Shimizu and Law to split the image obtain by Shimizu into multiple sets of sections, and sending a thread out for each subpiece.

The suggestion/motivation for doing so would have been to account for large pieces of image data.

Neither Shimizu nor Law expressly disclose that the thread executes a predetermined kind of image processing and another kind of image processing in succession. However it is well known in inspection systems to carry out one type of image processing followed by another type of image processing. Young discloses a multi-taking multi-threaded image processing system and method for image capture devices (col. 1 lines 58-61). As seen in figure 2 Young discloses a thread executing a predetermined kind of image processing (S140 analyze image for speckle) followed by another type of image processing in succession (S141 remove speckle).

Shimuzu, Law, and Young are analogous art because they are all from the same field of endeavor of multi-threading.

At the time of the invention it would have been obvious to combine Shimuzu and Law in the manner disclosed above and further combine Young to carry out one type of image processing followed by another type of image processing in succession. The motivation for doing so would be to carry out multiple image processing as is normally needed in a quick and efficient manner.

Thus it would have been obvious to one of ordinary skill in the art to combine Shimuzu, Law, and Young to obtain the invention as stated in claim 6.

Claim 14 is similar to claim 6, thus the same arguments used for the rejection of claim 6 apply equally to claim 14.

Allowable Subject Matter

4.   Claims 11-13, and 15 are allowed. These claims were indicated as allowable in the previous Office Action.

5.   As stated above claims 3-5, and 7 would be allowable if written to overcome the minor claim objection. These claims were also indicated as containing allowable subject matter in the previous Office Action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B Strege whose telephone number is (703) 305-8679. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public

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direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free).

JS

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